



Australian Government

Department of Education, Employment and Workplace Relations

CUVOPA10B Cut opal spheres and beads

Release: 1

CUVOPA10B Cut opal spheres and beads

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit covers the skills and knowledge to produce opal spheres and beads including the selection of the rough opal through to the drilling and final polishing.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit

This unit requires the application of knowledge and skills to the production of the spheres and beads to industry standards. It involves the use and maintenance of machinery and is applied in a workshop environment.

Where appropriate the outcomes of this unit could be contextualised to apply to other gemstones. Examples of aspects of the unit that may need to be adjusted would include:

- the specific properties of each gemstones
- industry and market requirements
- underpinning knowledge
- Range Statement.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

This unit may be assessed on its own or it may be assessed with other units that cover related skills and knowledge.

Evidence is most relevant when provided through an integrated activity which combines the Elements of competency for the unit, or a cluster of units of competency.

Employability Skills Information

Employability skills

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT

PERFORMANCE CRITERIA

- | | |
|--|---|
| 1 Set up machinery and equipment. | <ul style="list-style-type: none">1.1 Set up bead mill, sphere making equipment and drills to manufacturers' specifications.1.2 Identify the maintenance areas and complete the required maintenance routine.1.3 Investigate other methods of making bead and spheres if commercial equipment is not available. |
| 2 Select and pre-form material. | <ul style="list-style-type: none">2.1 Select materials suitable for making beads.2.2 Pre-form opal using saw or grinder to produce required shape.2.3 Grind shape corners to establish rounded form. |
| 3 Produce opal bead. | <ul style="list-style-type: none">3.1 Fill holder template with pre-formed beads (range of shapes).3.2 Grind preformed beads in bead mill using #120 silicon carbide powder until they are rounded.3.3 Change the holder template to a small size if necessary.3.4 Faulty or broken opal is removed from the bead mill.3.5 Remove beads from the bead mill and clean. |
| 4 Drill beads. | <ul style="list-style-type: none">4.1 Select beads for drilling.4.2 Place bead in bead vice, drill half way into the bead, turn over, check alignment and drill the other half ensuring a cut hole through the bead. |
| 5 Polish beads. | <ul style="list-style-type: none">5.1 Place cleaned beads in tumble polisher with increasingly fine grinding medium.5.2 Clean tumbler and beads at every change over.5.3 Clean beads thoroughly after the final grind, place in the tumbler with polishing medium and tumble to a high lustre.5.4 Clean finished beads thoroughly with water. |

ELEMENT**PERFORMANCE CRITERIA****6 Produce opal spheres.**

- 6.1 Select opals to make spheres and pre-form the spheres.
- 6.2 Grind the spheres in a sphere maker with water and increasingly fine grinding medium.
- 6.3 Clean spheres thoroughly at each change over.
- 6.4 Polish cleaned sphere with polishing medium and water using leather sphere cups to desired polish.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills:

- skills in using and maintaining the machinery and equipment
- skills in selecting appropriate material for beads and spheres.

Required knowledge:

- the suitability of rough for production of beads and spheres taking into account the level of wastage and cost
- knowledge of the equipment and consumables needed for the process
- industry standards for opal beads and spheres.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Critical aspects for

To achieve competency in this unit, a person must be

EVIDENCE GUIDE

assessment and evidence required to demonstrate competency in this unit

able to produce opal beads and spheres to industry standards.

The assessment must confirm that the person is able to identify and safely use machinery and equipment to cut and polish opal beads and spheres to meet the requirements of industry.

Competence in this unit must be assessed over a period of time in order to ensure consistency of performance over the range of variables and contexts applicable to the work environment.

Context of and specific resources for assessment

This unit may be assessed in a work environment, in a simulated work environment or in a combination of these situations.

Method of assessment

For valid and reliable assessment of this unit, evidence should be gathered through a range of methods to indicate consistent performance.

Assessment of this unit of competence will usually include observation of processes and procedures, oral and/or written questioning on underpinning knowledge and skills, evaluation of the finished product, and other methods as required.

Assessment methods should closely reflect workplace demands (e.g. literacy) and the needs of particular groups (e.g. people with disabilities, and people who may have literacy or numeracy difficulties such as speakers of languages other than English, remote communities and those with interrupted schooling).

Assessment of this competency requires access to:

- the machinery, equipment and consumables required to produce opal beads and spheres
- a qualified workplace assessor or assessment team.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Bead mill, sphere making equipment and drills may include:

- ARROWHEAD GEMCRAFT (USA) Sphere Machine
- E&J Adams Lapidary (USA) Sphere Machine
- home made equipment
- MAHASHI (Japan) Bead-mill
- Richardson's (USA) Sphere Machine.

Maintenance areas may include:

- bead-mill:
 - all bearings
 - all electrics
 - bead holders, wear factor
 - bottom rotating disc, wear factor
 - rubber pad on top rotating disc
- sphere makers:
 - all electrics
 - assorted sphere cups, wear factor
 - polishing pads
 - reduction boxes.

Materials suitable for making beads or spheres may include:

- any opal material is suitable for beads, taking into account a yield factor or recovery rate of only 10% to 15% from a given ounce of rough opal
- beads may be a variety of regular or free form shapes
- spheres can also be cut from any opal material, again the yield factor must be considered.

Grinding mediums may

- diamond powder #80 through to #1200

RANGE STATEMENT

include:

- silicon carbide grit #80 through too #1200.

Polishing mediums may
include:

- cerium or tin oxide
- diamond powder #3000 through too #100,000.

Unit Sector(s)

Not Applicable

Competency field

Competency field Opal cutting and polishing